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CULTURAL AND OTHER METHODS FOR THE CONTROL OF INJURIOUS WILDLIFE

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INTRODUCTION

Control of mammals and birds that cause economic losses is one of the most perplexing problems in the wildlife field. This is because of the widespread opinion that an impassable rift exists between the interests on the one hand of the farmer, stockman, poultryman, and forester, who seek protection for their stocks, and on the other those of the conservationist, who deplores sweeping reductions of any form of wildlife. The Bureau of Biological Survey, with a staff engaged in control-methods research, is in position to be of service to all wildlife interests in clearing this unnecessary handicap.

Unquestionably, some form of control is often necessary. This is admitted even by the man most out of contact with wildlife. For example, one who lives in an apartment hotel in any of the large eastern cities has on occasion halted, daubed hurriedly at the shoulder of his coat, and uttered a few angrily appropriate words as to the mobs of starlings on the electric signs overhead; and the very next day he may have directed similar remarks to the mole whose runway deflected the golf ball he had just putted.

In the last analysis, however, all are of one mind regarding the desirability of conservation of wildlife resources. The farmer, once his means of livelihood is not endangered by losses chargeable to wildlife, becomes the mainstay of the wildlife conservation program. In fact, wildlife is the heritage of the landholders. Until research develops adequate means of preventing damage by certain animals, however, the farmer and rancher must continue to control them by reduction. Support of plans for game increase can hardly be expected until management of game is so perfected that crops will not be endangered.

It should not be forgotten that adequate crop protection against mammal and bird damage is attained in scores of instances without harm to the offending species. Control-methods research is management research in the best sense of the term. The Biological Survey through development of new methods of suppressing injurious birds and mammals, and by careful supervision of methods already in use, endeavors to afford protection to game and other desirable forms of wildlife, to field crops, and to livestock, without undue pressure on the offending animals or injury to beneficial or harmless species. Such research is an important part of conservation.

It will be well to consider briefly how methods can be developed and applied for protecting wildlife, farm crops, and livestock from destructive mammals and birds, at the same time following the precepts of wildlife conservation. Some of the methods herein mentioned may seem commonplace, but few people realize how extensively they are used.

CULTURAL METHODS

Cultural methods consist in modifying agricultural practices, including those concerned with stock raising, so as to prevent conditions that encourage damage by wildlife. Development of cultural methods requires a far-reaching program, and one that in its many ramifications is necessarily time consuming in its application.

Clean Cultivation

Everywhere in orchard regions--on the Pacific coast, in western Colorado, in Virginia, or in New England--losses are caused through the girdling of apple and other fruit trees by the common meadow mouse. The annual loss reaches six figures. Except under plague conditions, the number of meadow mice that infest an orchard depends upon the available cover and food. If clean cultivation is practiced, these rodents will not be troublesome. If, however, in the interest of soil conservation it is necessary to maintain a sod covering in the orchard, then the grass should be mowed short, and a space having a 2-foot radius around the base of each tree should be kept clean. The orchard floor should be smooth, that, is, free of ruts, terraces, and rock outcrops, for it is in such shelters that meadow mice gain their first foothold. The fruit grower who eliminates habitat for the rodents will keep their numbers at the minimum in his orchard and should have little need to resort to other means of control.

Timely Planting

Each fall, migrating flocks of blackbirds cause heavy damage to ripening rice in the fields of the Gulf coast in Texas and Louisiana. According to E. R. Kalmbach, of the Biological Survey, only the late-maturing rice is affected. Hence the solution may be to plant early-maturing varieties.

Regulated Grazing

At the North American Wildlife Conference in 1937, F. E. Garlough, director of the Biological Survey's Control Methods Research Laboratory, reported that pocket gophers do not reach peak infestations in climax grasslands. Overgrazing by cattle, however, results in replacement of the forage grasses by more bulbous-rooted plants (weeds), and as these are a favored food of the pocket gopher, the numbers of these rodents then increase. An over-abundance causes the eradication of the plants, which in turn is follwed by erosion and lowering of water tables. The solution is entirely prophylactic--controlled grazing to maintain climax grasslands.

DEFENSIVE METHODS

Scarecrows

In this mechanical age the best scarecrows are noise and light makers, such as flash guns, revolving lights, and fireworks. These and similar contrivances are designed to keep flights of ducks from alighting in a grainfield, to drive herons from a locality in which their roosts prove objectionable, or to protect crops from various other birds.

Repellents

A repellent but otherwise harmless gas can be used to protect property without killing the offending animal--for example, to drive bats from buildings. Repellents may be widely applied, and their utilization is a promising field for research. Chipmunks, deer mice, and other small rodents impede reforestation through their ability to find the planted seeds. Much time has been devoted to the development of repellent coatings for seeds. To fend off attacks by deer, rabbits, and porcupines, repellent sprays are being continually improved for use on seedling conifers and hardwoods transplanted in projects of reforestation, highway improvement, and soil conservation. Deer may be prevented from damaging orchards by the use of asafetida or naphthalene, in some instances.

Fences

In parts of southwestern Texas, sheep are grazed in some pastures without herders in areas surrounded by coyote-proof fences. Many gardens also are enclosed. The electric fence is being tested to check foraging by deer. The wire-net guard wrapped about the base of fruit trees to prevent girdling by rabbits and mice is modified fencing. Metal shields placed about the trunks of nut-bearing trees exclude squirrels. A thin concrete wall sunk 1-1/2 feet in the ground is a barrier to moles that burrow near valuable bulb plantings. Examples of this method are numerous.

Transplanting

The transplanting method has been used perhaps most frequently with beavers. These animals may feed on apple trees, or by damming streams they may flood orchards, wood lots, and even roads. Beavers are so valuable in other respects, that their destruction is less desirable than transfer to a place where they will do no serious harm. Their services in erosion control and their value in producing high-class fur more than repay the cost of live-trapping and transplanting.

AGGRESSIVE METHODS

The Biological Survey, both in research and practice, recognizes the need for management-control operations. Each new problem in the control of injurious mammals and birds is studied to determine whether the damage inflicted can be avoided by nonreductive control. At times, however, it is necessary to resort to measures for suppressing the abundance of certain species. The Survey fully recognizes that in general the control of animals causing economic losses is largely a local problem. No species is uniformly destructive to man throughout its entire range. Because control is local, extermination is impossible. For example, porcupines are destructive locally to orchards and to truck farms in Maine, but as these areas are scattered State-wide control is unnecessary. Control measures should usually be applied only where damage occurs. When animals are responsible for the spread of contagious diseases to human beings, however, severe and even drastic measures may be necessary over wide areas. Methods employed in control by reduction in numbers are well known and for the most part need no explanation. These are hunting, trapping, and the use of toxic gases and baits. In the control of animals through poisoning operations, the Biological Survey uses every precaution to protect beneficial wildlife.

The mouse control program in New England illustrates the care and sincerity of purpose with which Survey workers proceed with the use of poison so as to protect other wildlife while attaining control of the destructive species.

In the New England States, to build up thin soils, offset the effects of the burning of humus as part of clean cultivation, conserve moisture, and check erosion, orchardists have been forced to mulch the orchard floor. This makes ideal conditions for increased numbers of tree-girdling meadow mice. No mechanical protection of fruit trees or other nonreductive methods of control yet devised have proved adequate to check serious losses through girdling of crown and root systems by mice.

In devising means of controlling these tree-girdling rodents through poisoning operations, the Biological Survey is not undertaking a method not already in common use. Fruit growers have always used poison to check meadow mice. Investigations during the fall of 1936, however, disclosed that many of the home-made remedies are definitely dangerous to beneficial wildlife.

The elimination of all meadow mice from orchards would not appreciably affect the food supply of valuable fur animals, as for every acre in orchard there are a thousand acres in meadow and brushland in which mice are unmolested.

Safeguards Employed

Covered baits.--Through the use of concentration stations it has been demonstrated that even the most toxic of poisons can safely be exposed in an orchard without injury to bird life. At these stations, all baits are placed under cover consisting of mulch, haycocks, corn fodder, or burlap bags laid close to the ground. This practice not only protects beneficial and harmless species but is advantageous to the orchardist in simplifying his task of locating mouse runways and applying bait. Furthermore, it has been stressed to him that as meadow mice will not feed in the open all bait spots must be carefully covered to assure good acceptance. Thus, the poison baits in concentration stations are available only to the mice.

Field demonstrations.--A second aid to conservation is adequate instruction of the farmer who is to use the poison, through direct personal contact by the Bureau's trained personnel. Field demonstrations and supervision are largely resorted to in the New England projects because of the increased safety of supervised operations.

Fall baiting.--It is a common practice in rodent control to expose poison baits in fall, midwinter, and spring. Investigations have demonstrated that if a proper application is made baiting is necessary only once, in fall. A well-timed, single poison exposure thus replaces multiple baiting. One baiting in fall, when the bird population is low because of the southern migration, is a factor of consequence so long as it is not entirely under responsible supervision.

Using less bait.--Previously orchardists in New England had been exposing poison each fall to insure against possible mouse damage, and they were not definitely instructed in the recognition of injurious infestations. As meadow mice fluctuate greatly in numbers from year to year, the same quantity of poisoned bait need not be used each season. A survey of conditions in Massachusetts during the winter of 1936 revealed that 70 percent of the poisoned bait used by orchardists was unnecessary. In an effort to correct this situation, the Biological Survey and its cooperating agencies held field demonstrations in each fruit-growing community of the six New England States during the fall of 1937. Reduction in the quantities of poison used is a fourth step in safeguarding this control program.

Short-period exposure.--At the beginning of the study it was determined that poisons need not be exposed for long periods to insure adequate control; proper baiting is effective within 24 hours. The Biological Survey is now recommending a bait material that decomposes within 4 or 5 days. As in a few cases it might be necessary to use a more-lasting bait, the Bureau has selected a poison that is self-oxidizing, so that regardless of the condition of the material its toxicity disappears in 10 to 14 days. Drastic reduction in the poison exposure period is another long step in conserving beneficial forms.

Selective baits.--There is yet another possible control safeguard. The idea that an emetic could be added to the toxic formula and thereby give protection to the larger fur bearers and some domestic animals has been advanced by F. E. Garlough of the Biological Survey. Accordingly, chemicals that cause vomiting in most mammals except rodents are being studied in connection with the meadow mouse problem.

With similar careful procedure the Biological Survey attempts in every way possible to safeguard beneficial and harmless forms while efficiently checking an injurious species.